

### Bent Rung Ladders.

Indiana Bent Rung Ladder Company, Indiana, Pa., represented by the Boggs Hardware Company, 23 Warren street, New York City, is manufacturing the bent rung ladders here illustrated, in addition to other similar goods in the line. The distinctive feature of this style of ladder consists of a semitubular wrought steel brace inserted in a recess on the inner sides of the ladder, and

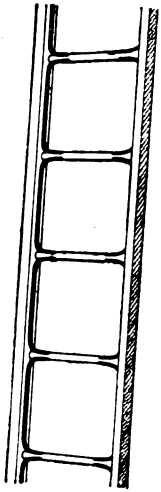


Fig. 1.—Single Bent Rung Ladder.

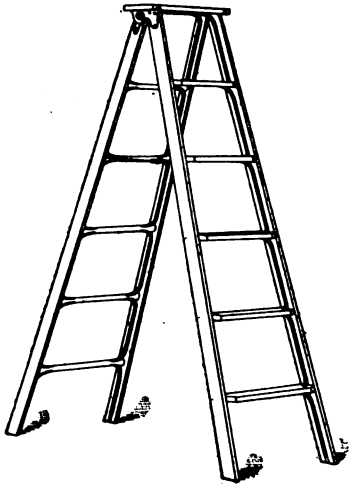


Fig. 2.—Double Columbia Step Ladder.

bent at right angles at each end and clinched to the top and bottom of each step or rung. While greatly strengthening this form of construction, it also adds to the rigidity and strength by not boring holes in the sides to hold the rungs, which sometimes weakens a ladder where the breaking point occurs, at the junction of steps and sides. It is said by the company that with its patented semitubular wrought steel brace this objection is overcome, as the brace strengthens the steps and rungs where the greatest strain occurs. It is also remarked that the knee or angle on the brace serves to transmit the strain on

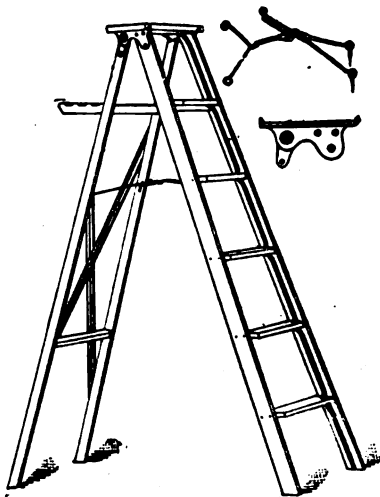


Fig. 3.—Single Columbia Step Ladder.

the side pieces in a downward direction. It is asserted that the brace not only strengthens the individual step or rungs and side section, where it is placed, but that the series of braces distribute the weight throughout the entire ladder, thus relieving the rung directly beneath of the weight of much of the strain. The principle of applying the brace to step ladders is the same as to rung ladders, except that the knee or angle is flattened to conform to the flat surface of the step; otherwise the brace is semitubular. The ladders are constructed throughout of selected basswood, Norway pine, &c., for the sides, and of selected hickory or oak for the rungs and steps. Fig. 1 represents the new model single bent rung ladder, weighing but  $1\frac{1}{4}$  lb. to the foot, and each step will carry safely, it is said, 250 lb. It is made in 12, 14, and 16 in. widths, and all sizes up to 22 ft., in-

clusive. The company apply an automatic clutch to its extension ladder. Another form of this construction is an extension ladder made in series from 8 to 22 ft. each section, the longest extension ladder extending 41 ft. There is also a sectional ladder embodying similar principles as to rungs and sides. Fig. 2 illustrates the double Columbia step ladder, being a double ladder with steps on one side and rungs on the other. The patent wire leg brace, seen in detail in Fig. 3, keeps the ladder stiff and at the same time allows it to conform itself to any unevenness of floor, thereby preventing "walking." This ladder is made in lengths from 3 to 20 ft., inclusive. Fig. 3 shows the single Columbia step ladder, similar to the ladder illustrated in Fig. 2, except that it has a plain back. This ladder is made in 3 to 20 ft. lengths and has a bucket shelf.